



# Clinical Experience with Compression Taping to Treat Seroma After Breast Cancer Surgery: A Medical Device Clinical Study

Erica Alves Nogueira Fabro, MSc, PT; Clarice Gomes Chagas Teodózio, MSc, PT; Rejane Medeiros Costa, PhD, PT; Flávia Oliveira Macedo, MSc, PT; Aline Cecília Drumond Dutra Luz Machado Cardoso, BSc; Raquel Barroso Evaldt Jacob, BSc; Luiz Claudio Santos Thuler, MD, PhD; and Anke Bergmann, PhD, PT

## ABSTRACT

**Objective:** To evaluate the safety of compressive taping in patients with seroma secondary to breast cancer surgery.

**Methods:** This study was a nonrandomized clinical study of medical devices applied to women indicated for seroma aspiration puncture after breast cancer surgery in a public reference hospital in Brazil. The intervention consisted of applying compressive taping over the seroma fluctuation area and maintained for 5 days. Evaluated outcomes comprised dermal changes caused by taping, subjective symptoms reported during the intervention period, and percent change in the punctured volume before and after the intervention.

**Results:** A total of 35 women (mean age, 56.7 ± 12.2 years) were included. Most presented with an advanced disease stage (≥IIIB; 62.9%). Although a 28.6% incidence of dermal changes caused by taping was observed, an average reduction in the aspirated volume of -28.2 mL was identified (95% confidence interval, -48.3 to -8.0;  $P = .008$ ). Treatment adherence was high (91.4%), and most patients reported satisfaction with the treatment (85.7%).

**Conclusions:** The use of compressive taping on seroma areas can be considered safe, is well accepted by patients, and might be used as a noninvasive treatment option for seroma developing after breast cancer surgery.

**Keywords:** breast cancer, kinesiology tape, medical device study, physiotherapy, seroma, wound

ADV SKIN WOUND CARE 2022;35:1-6.

DOI: 10.1097/01.ASW.0000831068.34587.3d

## INTRODUCTION

Seroma is the most common complication after surgical breast cancer treatment (occurring in up to 96% of patients).<sup>1</sup> Seroma incidences ranging from 39.4%<sup>2</sup> in patients at the initial stage to 59.4% at any stage<sup>3</sup> have been reported in studies conducted with women treated at the National Cancer Institute in Brazil. Seroma occurrence has been associated with different sociodemographic, clinical, and surgical procedure risk factors.<sup>2,4-9</sup>

The presence of seroma can impact patient satisfaction and quality of life and may lead to the need for repeated punctures, new surgical procedures, and delayed adjuvant treatment.<sup>1,5,9</sup> In addition, seroma increases the risk of infections, scarring,<sup>4,10</sup> and lymphedema.<sup>11-15</sup> The best strategy for seroma prevention after surgery is drain insertion, but other approaches have been discussed in the literature.<sup>10-19</sup> Bandages or compressive dressings may also prevent seroma formation because they can help reduce the dead space left by the surgery.<sup>16,19-23</sup>

Recently, kinesiology taping has been applied to patients with breast cancer, especially for lymphedema treatment.<sup>24-26</sup> Bosman and Piller<sup>11</sup> carried out a randomized clinical trial pilot study assessing the use of a lymph taping technique and verified that the technique may reduce extracellular fluid accumulation. However, the trial was small ( $N = 9$ ) and did not report significant results. To date, the definitive efficacy of compressive taping in preventing and treating seroma is not known. Further, no studies have evaluated the safety and tolerability of this procedure in relation to its application directly on the seroma and the risk of complications to the skin of the affected region. Accordingly, the present study aimed to evaluate the safety of compressive

At the National Cancer Institute, Rio de Janeiro, Brazil, Erica Alves Nogueira Fabro, MSc, PT, is Physical Therapist Manager, Physiotherapy Service, Cancer Hospital III; Clarice Gomes Chagas Teodózio, MSc, PT, is a PhD student, Oncology PhD Student Program; Rejane Medeiros Costa, PhD, PT, and Flávia Oliveira Macedo, MSc, PT, are Physical Therapists, Physiotherapy Service, Cancer Hospital III; Aline Cecília Drumond Dutra Luz Machado Cardoso, BSc, and Raquel Barroso Evaldt Jacob, BSc, are nurses, Nursing Service, Cancer Hospital III; and Luiz Claudio Santos Thuler, MD, PhD, and Anke Bergmann, PhD, PT, are Researchers, Clinical Epidemiology Program. **Acknowledgment:** The authors thank FisioVital (Indaíatuba, São Paulo, Brazil) for donating the Vitaltape bandage necessary for this research. The authors have disclosed no other financial relationships related to this article. Submitted May 19, 2021; accepted in revised form August 18, 2021.

taping in patients with seroma secondary to surgical breast cancer treatment.

## METHODS

This study was a pre/post nonrandomized clinical trial to assess the safety of taping in seroma treatment. Women with an indication for seroma puncture aspiration after surgical breast cancer were included. Patients with bilateral breast cancer, undergoing neoadjuvant radiotherapy, presenting with surgical wound infections or autoimmune diseases, and/or with difficulties in understanding and answering the questions were excluded from the study.

All patients were evaluated and submitted for intervention by a trained physiotherapist. A single physiotherapist applied all tape (5-cm wide Valtape; Fisiovital, Indaiatuba, São Paulo, Brazil) after skin antiseptis. Maximum tape stretching (100%) was performed over the fluctuation region (seroma), keeping the extremities of the bandage (2–3 cm) unstretched for skin protection (Figure, A). The number of strips was determined according to the body characteristics of each patient (trunk height and width) and the aspect of the fluctuation region. Taping was not applied to any sutured area while patients still had the surgical stitches (Figure, B) and was maintained for approximately 5 days.

The patients were interviewed before the intervention and at the end of the study. Data related to sociodemographic characteristics and lifestyle habits were obtained during the initial interview. At the end of the study, the following outcomes were assessed: local symptoms caused by taping; the tolerance and feeling/sensation referred to during the intervention period (based on a scale previously used by Martins et al<sup>27</sup>); the percentage of change in the seroma volume before and after taping; the number of days of use; and taping detachment.

An assessment of the range of motion of the upper limbs was performed based on the patient's active movement and categorized as incomplete, functional, or complete. The first author collected information regarding oncologic treatment, histopathologic reports, and clinical data on dressing care from hospital records.

Researchers estimated a need to include at least 27 patients, assuming a 20% complication rate from taping, with an absolute precision of 15 and a significance level of 5%.<sup>28</sup> To assess adherence to compressive taping treatment, patients completed a home guide asking their perceptions on local symptoms caused by taping, tolerance, and feeling/sensation. Adherence was defined as maintaining the taping during the proposed number of days, whereas nonadherence was considered tape removal at any time prior to reevaluation.

A descriptive analysis of the obtained sociodemographic and clinical variables was performed using central tendency, dispersion, and frequency distribution measures. A *t* test was used to assess the difference between the averages of the punctured volumes before and after taping. The  $\chi^2$  test was used to assess categorical variables, with a 95% confidence interval (CI). Investigators used the Statistical Package for the Social Sciences version 23.0 (IBM, Armonk, New York) for all analyses.

This project was approved by the Research Ethics Committee of the National Cancer Institute under protocol number 2,079,572 on May 24, 2017, and registered in the National Library of Medicine (ClinicalTrials.gov identifier NCT03590704).

## RESULTS

A total of 35 women with a mean age of  $56.7 \pm 12.2$  years were included. Most (62.9%) were diagnosed with advanced-stage breast cancer ( $\geq$ IIB) and undergoing

### Figure. TWO EXAMPLES OF TAPING

A, Taping applied to the fluctuation region. B, Taping not applied to the sutured area.





**Table 1. DEMOGRAPHIC AND CLINICAL CHARACTERISTICS (N = 35)**

Characteristic	n (%)
<b>Age, mean (SD), y</b>	56.7 (12.2)
<b>Race</b>	
White	12 (34.3)
Non-White	23 (65.7)
<b>Marital status</b>	
With partner	18 (51.4)
No partner	17 (48.6)
<b>Education</b>	
<8 y of schooling	17 (48.6)
≥8 y of schooling	18 (51.4)
<b>Smoking</b>	
No	35 (100.0)
Yes	0 (0)
<b>Consumption of alcoholic beverages</b>	
No	25 (71.4)
Yes	10 (28.6)
<b>Body mass index,<sup>a</sup> kg/m<sup>2</sup></b>	
Normal weight	6 (17.1)
Overweight	12 (34.3)
Obese	17 (48.6)
<b>Diabetes</b>	
No	29 (82.9)
Yes	6 (17.1)
<b>Hypertension</b>	
No	16 (45.7)
Yes	19 (54.3)
<b>Self-reported health status</b>	
Very good	7 (20.0)
Good	16 (45.7)
Regular	11 (31.4)
Bad	1 (2.9)
<b>Clinical staging</b>	
Initial (<IIB)	13 (37.1)
Advanced (≥IIB)	22 (62.9)
<b>Neoadjuvant chemotherapy</b>	
No	14 (40.0)
Yes	21 (60.0)
<b>Neoadjuvant hormone therapy</b>	
No	33 (94.3)
Yes	2 (5.7)
<b>Neoadjuvant target therapy</b>	
No	30 (85.7)
Yes	5 (14.3)

(continues)

**Table 1. DEMOGRAPHIC AND CLINICAL CHARACTERISTICS (N = 35), CONTINUED**

Characteristic	n (%)
<b>Type of surgery</b>	
Mastectomy	30 (85.7)
Conservative	5 (14.3)
<b>Axillary surgical approach</b>	
Sentinel lymph node biopsy	6 (17.1)
Axillary lymphadenectomy	28 (80.0)
Both	1 (2.9)
<b>Adhesion</b>	
Adhesion	32 (91.4)
Nonadhesion	3 (8.6)

<sup>a</sup>According to the World Health Organization, a normal body mass index is 18.5-24.99 kg/m<sup>2</sup>; overweight, 25.0-29.99 kg/m<sup>2</sup>; obese, ≥30.0 kg/m<sup>2</sup>.

mastectomy (85.7%), neoadjuvant chemotherapy (60.0%), and axillary lymphadenectomy (80.0%; Table 1).

The patients underwent taping for an average of 5 days (range, 2 to 8 days), and an average of three taping strips (range, 1 to 6 strips) were applied. The incidence of changes observed after taping is described in Table 2. On physical examination, local hyperemia was observed in 20% of the cases; the most frequent subjective symptoms included a feeling of tightness (37.1%) and seroma worsening (37.1%). Three patients (8.6%) removed the taping at home because of pain, a burning sensation, or hyperemia around the taping. One end of the tape detached for 42.9% of the patients, and total detachment of two strips was observed in one patient (2.9%) for whom three strips were applied (data not shown).

In terms of surgical complications after compressive taping, 8.6% of patients reported pain. In contrast, 11.4% of the patients reported pain improvement, and 14.3%, paresthesia improvement. No changes concerning shoulder to flexion range of motion were noted for 94.3% of the patients or for shoulder to abduction range in 88.6% of all cases (Table 2).

Regarding sensations during the use of compressive taping, no changes in social life were reported for 91.4% of the patients, and no changes in daily activities were noted for 65.7%. In addition, 68.6% of patients felt safer. Most (85.7%) reported satisfaction with the use of taping and stated that they would accept the treatment again if necessary (62.9%; Table 2).

Before compressive taping, an average of 104 ± 63.1 mL of liquid was aspirated from the flotation area. After taping removal, an average of 76.5 ± 84.2 mL was aspirated, representing an average decrease of -28.2 mL (95% CI, -48.3 to -8.0; P = .008). Although most patients presented with decreased punctured volume after the intervention,

**Table 2. INCIDENCE OF CHANGES AT THE TIME OF COMPRESSIVE TAPING REMOVAL AND SENSATIONS REPORTED BY WOMEN DURING TAPING USE (N = 35)**

Changes After Compressive Taping	n (%) *
<b>Dermal changes in the area<sup>a</sup></b>	
Hyperemia	7 (20.0)
Blister	3 (8.6)
Flaking	1 (2.9)
Hyperthermia	1 (2.9)
Wound	0 (0.0)
Any dermal changes	10 (28.6)
<b>Subjective symptoms<sup>a</sup></b>	
Feeling of tightness	13 (37.1)
Sensation of increased seroma	13 (37.1)
Itching	15 (42.9)
Burning	8 (22.9)
Discomfort	7 (20.0)
Any subjective symptom	28 (80.0)
<b>Pain at the seroma site</b>	
Painless	26 (74.3)
Pain continuing in the area	2 (5.7)
Pain onset after the intervention	3 (8.6)
Pain improvement after the intervention	4 (11.4)
<b>Paresthesia in the intercostobrachial nerve path</b>	
No paresthesia	2 (5.7)
Continuous paresthesia	28 (80.0)
Improvement after intervention	5 (14.3)
<b>Shoulder flexion range</b>	
Maintenance	33 (94.3)
Improvement	0 (0)
Worsening	2 (5.7)
<b>Shoulder abduction amplitude</b>	
Maintenance	31 (88.6)
Improvement	2 (5.7)
Worsening	2 (5.7)
<b>Social life</b>	
No change	32 (91.4)
Better	3 (8.6)
Worse	0 (0.0)
<b>Safety</b>	
No change	10 (28.6)
Less secure	1 (2.9)
Safer	24 (68.6)
<b>Daily activity</b>	
No change	23 (65.7)
Harder	1 (2.9)
Easier	11 (31.4)

(continues)

**Table 2. INCIDENCE OF CHANGES AT THE TIME OF COMPRESSIVE TAPING REMOVAL AND SENSATIONS REPORTED BY WOMEN DURING TAPING USE (N = 35), CONTINUED**

Changes After Compressive Taping	n (%) *
<b>Satisfaction</b>	
Satisfied	30 (85.7)
Not very satisfied	2 (5.7)
Dissatisfied	3 (8.6)
<b>Would use again</b>	
No	4 (11.4)
Yes	22 (62.9)
No information	9 (25.7)

\*One patient may display more than one change

an 18.2% increase in the amount of aspirated fluid was observed (data not shown). Drained volume after taping could not be determined for two patients because of surgical wound dehiscence and spontaneous seroma drainage.

When analyzing the factors associated with changes after compressive taping, it appeared that patients undergoing neoadjuvant chemotherapy displayed worsened aspirated volume ( $P = .029$ ). In addition, patients receiving mastectomies presented a higher frequency of subjective symptoms in the seroma area ( $P = .044$ ; Table 3).

## DISCUSSION

This study included 35 women presenting with seroma secondary to surgical breast cancer treatment. Although skin changes caused by taping were observed, aspirated volume decreased, treatment adherence was high, and most patients reported satisfaction with the received treatment.

Among the dermal changes observed with the use of taping, 20% of participants experienced hyperemia cases. Martins et al<sup>28</sup> evaluated the safety of taping on arms with lymphedema and observed a low incidence of dermal changes. It is believed that the difference in hyperemia frequency between studies is attributable to the evaluated region.

A total of 8.6% of patients removed the compressive taping because of dermal changes or pain. Studies assessing the use of kinesiology tape in patients with lymphedema reported that 10% to 21% of patients removed the tape, although these studies do not specify which types of reactions were involved.<sup>28-30</sup>

Aguilar-Ferrándiz et al,<sup>31</sup> in a randomized clinical trial to assess the effect of Kinesio Tape on venous symptoms of the lower limbs, observed a greater decrease in paresthesia and pain in the intervention group versus control ( $P = .042$ ). The present study also reported decreased paresthesia (14.3%), but with pain worsening in 8.6%



**Table 3. ASSOCIATIONS BETWEEN DEMOGRAPHIC AND CLINICAL CHARACTERISTICS AND CHANGES OBSERVED AFTER COMPRESSIVE TAPING**

Characteristics	Worsening of Aspirated Volume			Any Dermal Changes			Any Subjective Symptoms		
	No	Yes	P	No	Yes	P	No	Yes	P
<b>Age</b>									
<60 y	14 (51.9)	4 (66.7)	.510	14 (56.0)	6 (60.0)	.829	2 (28.3)	18 (64.3)	.088
≥60 y	13 (48.1)	2 (33.30)		11 (44.0)	4 (40.0)		5 (71.4)	10 (35.7)	
<b>Marital status</b>									
With partner	15 (55.6)	2 (33.3)	.325	12 (48.0)	6 (60.0)	.521	5 (71.4)	13 (46.4)	.237
No partner	12 (44.4)	4 (66.7)		13 (52.0)	4 (40.0)		2 (28.6)	15 (53.6)	
<b>Education</b>									
<8 y of schooling	14 (51.9)	2 (33.3)	.412	11 (44.0)	6 (60.0)	.392	3 (42.9)	14 (50.0)	.735
≥8 y of schooling	13 (48.1)	4 (66.7)		14 (56.0)	4 (40.0)		4 (57.1)	14 (50.0)	
<b>Nutrition status</b>									
Not obese	13 (48.1)	4 (66.7)	.412	15 (60.0)	3 (30.0)	.109	4 (57.1)	14 (50.0)	.735
Obese	14 (51.9)	2 (33.3)		10 (40.0)	7 (70.0)		3 (42.9)	14 (50.00)	
<b>Clinical stage</b>									
Initial	12 (44.4)	1 (16.7)	.208	10 (40.0)	3 (30.0)	.580	3 (42.9)	10 (35.7)	.726
Advanced	15 (55.6)	5 (83.3)		15 (60.0)	7 (70.0)		4 (57.1)	18 (64.3)	
<b>Neoadjuvant chemotherapy</b>									
No	13 (48.1)	0 (0)	.029	11 (44.0)	3 (30.0)	.445	5 (71.4)	09 (32.1)	.058
Yes	14 (51.9)	6 (100)		14 (56.0)	7 (70.0)		2 (28.6)	19 (67.9)	
<b>Type of surgery</b>									
Mastectomy	22 (81.5)	6 (100)	.252	19 (76.0)	100 (100)	.089	4 (57.1)	25 (89.3)	.044
Conservative	5 (18.5)	0 (0)		6 (24.0)	0 (0)		3 (42.9)	03 (10.7)	
<b>Axillary surgery</b>									
Lymphadenectomy	21 (77.8)	6 (100)	.202	21 (84.0)	8 (80.0)	.777	5 (71.4)	24 (85.7)	.370
Sentinel lymph node	6 (22.2)	0 (0)		4 (16.0)	2 (20.0)		2 (28.6)	04 (14.3)	

of the cases and improving in 11.4%. A meta-analysis of 20 randomized clinical trials that used Kinesio Taping for participants with myofascial pain syndrome concluded that the use of taping results in significant improvement in pain intensity and range of motion in the postintervention period.<sup>32</sup>

Martins et al<sup>27</sup> reported that 70.8% of assessed patients denied experiencing difficulties in carrying out daily living and social activities, and 75% were very satisfied with the use of taping. These results are in accordance with the present study, in which there was no change in social interaction (91.4%) or in daily activities (65.7%) and in which 85.7% of all patients reported treatment satisfaction.

The fluid volume captured by the nursing team before and after taping was reduced on average by -28.2% (95% CI, -48.3 to -8.0;  $P = .008$ ). This is similar to another case report that observed seroma reduction over the latissimus dorsi area (donor tissue region in a postoperative breast reconstruction patient) after 16 days of taping.<sup>33</sup> However, an increase in the amount of aspirated fluid was observed in 18.2% of the cases. This finding was associated

with neoadjuvant chemotherapy (doxorubicin, cyclophosphamide, and docetaxel). Verweij et al<sup>34</sup> observed that docetaxel reduced white blood cell count and BP but leads to worse cardiac function, peripheral neuropathy, muscle pain, and edema, among others. Ohsumi et al<sup>35</sup> stated that treatment with docetaxel was associated with a high frequency and severity of edema formation.

Patients who underwent mastectomies experienced more frequent subjective symptoms in the seroma region ( $P = .044$ ). De Glas et al<sup>36</sup> reported that patients who underwent mastectomy had a 72% higher chance of complications compared with those who underwent conservative surgery; patients who underwent axillary lymphadenectomy were 76% more likely to present with complications than those who did not undergo an axillary approach, and those who underwent neoadjuvant treatment had a 43% higher chance of complications than those who did not.

### Limitations

This study lacked a comparison group, because the main objective was to assess the safety of compressive taping

in this population. Further, because the outcome assessment was performed after 4 days, only the acute effects of a single taping application were measured. Studies with longer application and follow-up times may detect results different from those reported herein.

Further, the instrument used to access the local symptoms caused by the bandage, tolerance, and feeling/sensation may be considered a limitation. Although an instrument based on a scale was used previously by Martins et al,<sup>27</sup> it is not an internationally validated scale. Another issue is related to external validity, because this study included only women treated at a single public cancer treatment institution, limiting generalizability.

## CONCLUSIONS

The use of compressive taping on seroma after breast cancer surgery is noninvasive, easy, and quick. Further, it can be considered safe, has a low incidence of complications, is well accepted by patients, and may be used as a noninvasive treatment option for this complication. ●

## REFERENCES

- Thomson DR, Sadideen H, Furniss D. Wound drainage after axillary dissection for carcinoma of the breast. *Cochrane Database Syst Rev* 2013;(10):CD006823.
- Macedo FO, Bergmann A, Koifman RJ, Torres DM, Costa RM, Silva IF. Axillary surgery in breast cancer: acute postoperative complications in a hospital cohort of women of Rio de Janeiro, Brazil. *Mastology* 2018;28:80-6.
- Oliveira LL, Aguiar SS, Bender PFM, Bergmann A, Thuler LCS. Men have a higher incidence of seroma after breast cancer surgery. *Asian Pac J Cancer Prev* 2017;18:1423-7.
- Jordan SW, Khavanin N, Kim JY. Seroma in prosthetic breast reconstruction. *Plast Reconstr Surg* 2016;137:1104-16.
- Gunn J, Gibson T, Li Z, Diehl N, Bagaria S, McLaughlin S. Symptomatic axillary seroma after sentinel lymph node biopsy: incidence and treatment. *Ann Surg Oncol* 2016;23:3347-53.
- Falco M, Masojć B, Rolla M, et al. Risk factors for seroma evacuation in breast cancer patients treated with intraoperative radiotherapy. *Rep Pract Oncol Radiother* 2016;21:225-31.
- Faisal M, Fathy H, Shaban H, Abuelela ST, Marie A, Khaled I. A novel technique of harmonic tissue dissection reduces seroma formation after modified radical mastectomy compared to conventional electrocautery: a single-blind randomized controlled trial. *Patient Saf Surg* 2018;12:8.
- Ebner F, Friedl TWP, de Gregorio A, et al. Seroma in breast surgery: all the surgeons fault? *Arch Gynecol Obstet* 2018;298:951-9.
- Isozaki H, Yamamoto Y, Murakami S, Matsumoto S, Takama T. Impact of the surgical modality for axillary lymph node dissection on postoperative drainage and seroma formation after total mastectomy. *Patient Saf Surg* 2019;13:20.
- Yang A, Sokolof J, Gulati A. The effect of preoperative exercise on upper extremity recovery following breast cancer surgery: a systematic review. *Int J Rehabil Res* 2018;41:189-96.
- Bosman J, Piller N. Lymph taping and seroma formation post breast cancer. *J Lymphoedema* 2010;5:12-21.
- Fu MR, Guth AA, Cleland CM, et al. The effects of symptomatic seroma on lymphedema symptoms following breast cancer treatment. *Lymphology* 2011;44:134-43.
- Bevilacqua JL, Kattan MW, Changhong Y, et al. Nomograms for predicting the risk of arm lymphedema after axillary dissection in breast cancer. *Ann Surg Oncol* 2012;19:2580-9.
- Pereira ACPR, Koifman RJ, Bergmann A. Incidence and risk factors of lymphedema after breast cancer treatment: 10 years of follow-up. *Breast* 2017;36:67-73.
- Toyserkani NM, Jensen CH, Andersen DC, Sheikh SP, Sørensen JA. Treatment of breast cancer-related lymphedema with adipose-derived regenerative cells and fat grafts: a feasibility and safety study. *Stem Cells Transl Med* 2017;6:1666-72.
- Van Bemmel AJ, van de Velde CJ, Schmitz RF, Liefers GJ. Prevention of seroma formation after axillary dissection in breast cancer: a systematic review. *Eur J Surg Oncol* 2011;37:829-35.
- Ge D. The safety of negative-pressure wound therapy on surgical wounds: an updated meta-analysis of 17 randomized controlled trials. *Adv Skin Wound Care* 2018;31(9):421-8.
- Van Bastelaar J, Van Roozendaal L, Granzier R, Beets G, Vissers Y. A systematic review of flap fixation techniques in reducing seroma formation and its sequelae after mastectomy. *Breast Cancer Res Treat* 2018;167(2):409-16.
- Srivastava V, Basu S, Shukla VK. Seroma formation after breast cancer surgery: what we have learned in the last two decades. *J Breast Cancer* 2012;15:373-80.
- Kottayasamy Seenivasagam R, Gupta V, Singh G. Prevention of seroma formation after axillary dissection—a comparative randomized clinical trial of three methods. *Breast J* 2013;19:478-84.
- Mancaux A, Naepels P, Mychaluk J, Abboud P, Merviel P, Fauvet R. Prevention of seroma post-mastectomy by surgical padding technique. *Gynecol Obstet Fertil* 2015;43:13-7.
- Janis JE, Khansa L, Khansa I. Strategies for postoperative seroma prevention: a systematic review. *Plast Reconstr Surg* 2016;138:240-52.
- Mukherjee KA, Shoor G, Kundu T, Rulaniya SK, Saraf AK. Use of surgical site compression to prevent seroma formation following open inguinal hernioplasty with use of polypropylene mesh. *Int J Med Health Sci* 2017;6:24-6.
- Ergin G, Şahinoğlu E, Karadibak D, Yavuzşen T. Effectiveness of Kinesio Taping on anastomotic regions in patients with breast cancer-related lymphedema: a randomized controlled pilot study. *Lymphat Res Biol* 2019;17(6):655-60.
- Li L, Yuan L, Chen X, et al. Current treatments for breast cancer-related lymphoedema: a systematic review. *Asian Pac J Cancer Prev* 2016;17:4875-83.
- Kasawara KT, Mapa JMR, Ferreira V, et al. Effects of Kinesio Taping on breast cancer-related lymphedema: a meta-analysis in clinical trials. *Physiother Theory Pract* 2018;34:337-45.
- Martins JC, Aguiar SS, Fabro EAN, et al. Safety and tolerability of Kinesio® Taping in patients with arm lymphedema: medical device clinical study. *Support Care Cancer* 2016;24(3):1119-24.
- Taradaj J, Halski T, Rosinczuk J, Dymarek R, Laurowski A, Smykla A. The influence of kinesiology taping on the volume of lymphoedema and manual dexterity of the upper limb in women after breast cancer treatment. *Eur J Cancer Care (Engl)* 2015;25:647-60.
- Conejo Tirado I, Suarez Arcos M. Comparison between compressive therapy and neuromuscular taping for post-mastectomy oedema treatment. *Med Taping Concept Bull* 2012;4:7-9.
- Smykla A, Walewicz K, Trybalski R, et al. Effects of kinesiology taping on breast cancer-related lymphedema: a randomized single-blind controlled pilot study. *Biomed Res Int* 2013;2013:767106.
- Aguilar-Ferrández ME, Castro-Sánchez AM, Matarán-Peñarrocha GA, García-Muro F, Serge T, Moreno-Lorenzo C. Effects of Kinesio Taping on venous symptoms, bioelectrical activity of the gastrocnemius muscle, range of ankle motion, and quality of life in postmenopausal women with chronic venous insufficiency: a randomized controlled trial. *Arch Phys Med Rehabil* 2013; 94:2315-28.
- Zhang XF, Liu L, Wang BB, Liu X, Li P. Evidence for Kinesio Taping in management of myofascial pain syndrome: a systematic review and meta-analysis. *Clin Rehabil* 2019;33:865-74.
- Coutinho J, Casales C. Effectiveness of the "Punch Tape" application in seroma: a case of seroma after breast reconstruction surgery. *Annals 40th Congress European Society Lymphology*. 2014. [www.aneidbrasil.com/noticias/bandagem\\_neuromuscular](http://www.aneidbrasil.com/noticias/bandagem_neuromuscular). Last accessed April 18, 2022.
- Verweij J, Clavel M, Chevalier B. Paclitaxel (Taxol) and docetaxel (Taxotere): not simply two of a kind. *Ann Oncol* 1994;5:495-505.
- Ohsumi S, Shimozuma K, Ohashi Y, et al. Subjective and objective assessment of edema during adjuvant chemotherapy for breast cancer using taxane-containing regimens in a randomized controlled trial: the National Surgical Adjuvant Study of Breast Cancer 02. *Oncology* 2012;82:131-8.
- De Glas NA, Kiderlen M, Bastiaannet E, et al. Postoperative complications and survival of elderly breast cancer patients: a FOCUS study analysis. *Breast Cancer Res Treat* 2013;138:561-9.